WHAT IS CLAIMED IS:

1. A method for Computed Tomography scanners using multiple tilted reconstruction planes, said method comprising:

view weighting data in accordance with

$$\chi(\beta,\gamma)=\begin{cases} w_b & 0\le\beta\le 2\gamma_m-2\gamma \\ 1 & 2\gamma_m-2\gamma<\beta\le\pi-2\gamma \\ w_t & \pi-2\gamma<\beta\le\pi+2\gamma_m \end{cases}$$

$$\omega(\beta,\gamma)=3\chi^2(\beta,\gamma)-2\chi^3(\beta,\gamma)$$

where β is a central view angle, γ is a fan angle, γ_m is a maximum half fan angle of an x-ray beam, and w_b and w_t are each weights no greater than 1.

2. A method in accordance with Claim 1 wherein w_b is calculated by

$$w_b=\frac{e_t}{e_t+e_b} \text{ with } e_b=\int_0^{\frac{\pi}{2}+\gamma_m}|AT(\beta)-VT(\beta)|\,d\beta \text{ and } e_t=\int_{\frac{\pi}{2}+\gamma_m}^{\pi+2\gamma_m}|AT(\beta)-VT(\beta)|\,d\beta$$

where $AT(\beta)$ is an actual helical x-ray source trajectory (AT) of β and $VT(\beta)$ is a virtual x-ray source trajectory (VT) of β.

3. A method in accordance with Claim 1 wherein w_t is calculated by

$$w_t=\frac{e_b}{e_t+e_b} \text{ with } e_b=\int_0^{\frac{\pi}{2}+\gamma_m}|AT(\beta)-VT(\beta)|\,d\beta \text{ and } e_t=\int_{\frac{\pi}{2}+\gamma_m}^{\pi+2\gamma_m}|AT(\beta)-VT(\beta)|\,d\beta$$

where $AT(\beta)$ is an actual helical x-ray source trajectory (AT) of β and $VT(\beta)$ is a virtual x-ray source trajectory (VT) of β.

4. A method in accordance with Claim 2 wherein w_t is calculated by

$$w_t=\frac{e_b}{e_t+e_b} \text{ with } e_b=\int_0^{\frac{\pi}{2}+\gamma_m}|AT(\beta)-VT(\beta)|\,d\beta \text{ and } e_t=\int_{\frac{\pi}{2}+\gamma_m}^{\pi+2\gamma_m}|AT(\beta)-VT(\beta)|\,d\beta$$

where $AT(\beta)$ is an actual helical x-ray source trajectory (AT) of β and $VT(\beta)$ is a virtual x-ray source trajectory (VT) of β.

5. A method in accordance with Claim 1 wherein w_t is between .5 and .1, and w_b is between .5 and .9.

6. A method in accordance with Claim 1 wherein w_b is between .5 and .1, and w_t is between .5 and .9.

7. A method in accordance with Claim 5 wherein w_t is between .4 and .2, and w_b is between .6 and .8.

8. A method in accordance with Claim 6 wherein w_b is between .4 and .2, and w_t is between .6 and .8.

9. A method in accordance with Claim 1 wherein w_t is about .4 and w_b is about .6.

10. A method in accordance with Claim 1 wherein w_t is about .6 and w_b is about .4.

11. A Computed Tomography (CT) system comprising:

an x-ray source;

a detector positioned to receive x-rays emitted from said source; and

a computer operationally coupled to said source and said detector, said computer configured to:

receive data from a scan of an object; and

weight the received data in accordance with

$$\chi(\beta,\gamma)=\begin{cases} w_b & 0\le\beta\le 2\gamma_m-2\gamma \\ 1 & 2\gamma_m-2\gamma<\beta\le\pi-2\gamma \\ w_t & \pi-2\gamma<\beta\le\pi+2\gamma_m \end{cases}$$

$$\omega(\beta,\gamma)=3\chi^2(\beta,\gamma)-2\chi^3(\beta,\gamma)$$

where β is a central view angle, γ is a fan angle, γ_m is a maximum half fan angle of an x-ray beam, and w_b and w_t are each weights no greater than 1.

12. A system according to Claim 11 wherein w_t is between .5 and .1, and w_b is between .5 and .9.

13. A system according to Claim 11 wherein w_t is between .5 and .9, and w_b is between .5 and .1.

14. A system according to Claim 11 wherein w_t is between .4 and .2, and w_b is between .6 and .8.

15. A system according to Claim 11 wherein w_t is between .6 and .8, and w_b is between .4 and .2.

16. A system according to Claim 11 wherein w_t is about .4 and w_b is about .6.

17. A system according to Claim 11 wherein w_t is about .6 and w_b is about .4.

18. A method of obtaining and using weights, said method comprising:

setting $w_b = \frac{e_t}{e_t + e_b}$ and $w_t = \frac{e_b}{e_t + e_b}$ with $e_b = \int_0^{\frac{\pi}{2}+\gamma_m} | AT(\beta) - VT(\beta) | \, d\beta$ and $e_t = \int_{\frac{\pi}{2}+\gamma_m}^{\pi+2\gamma_m} | AT(\beta) - VT(\beta) | \, d\beta$ wherein AT(β) is an actual helical x-ray source trajectory (AT) of β and VT(β) is a virtual x-ray source trajectory (VT) of β; and

weighting image data with w_b and w_t prior to filtering and backprojecting the image data to reconstruct an image.

19. A method according to Claim 18 wherein w_t is between .5 and .1.

20. A method according to Claim 18 wherein w_b is between .5 and .1.

21. A method according to Claim 18 wherein w_b is between .5 and .9.

22. A method according to Claim 18 wherein w_t is between .5 and .9.

23. A method according to Claim 18 wherein w_b is between .5 and .9 and w_t is between .5 and .1.

24. A method according to Claim 18 wherein w_t is between .5 and .9 and w_b is between .5 and .1.

25. A computer readable medium encoded with a program configured to instruct a computer to:

receive data from a scan of an object; and

weight the received data in accordance with

$$\chi(\beta,\gamma)=\begin{cases} w_b & 0\le\beta\le 2\gamma_m-2\gamma \\ 1 & 2\gamma_m-2\gamma<\beta\le\pi-2\gamma \\ w_t & \pi-2\gamma<\beta\le\pi+2\gamma_m \end{cases}$$
$$\omega(\beta,\gamma)=3\chi^2(\beta,\gamma)-2\chi^3(\beta,\gamma)$$

where β is a central view angle, γ is a fan angle, γ_m is a maximum half fan angle of an x-ray beam, and w_b and w_t are each weights no greater than 1.

26. A medium in accordance with Claim 25 wherein said program further configured to instruct the computer to weight the received data in accordance with

$$\chi(\beta,\gamma)=\begin{cases} w_b & 0\le\beta\le 2\gamma_m-2\gamma \\ 1 & 2\gamma_m-2\gamma<\beta\le\pi-2\gamma \\ w_t & \pi-2\gamma<\beta\le\pi+2\gamma_m \end{cases}$$
$$\omega(\beta,\gamma)=3\chi^2(\beta,\gamma)-2\chi^3(\beta,\gamma)$$

wherein w_t is about .4.

27. A medium in accordance with Claim 25 wherein said program further configured to weight the received data in accordance with

$$\chi(\beta,\gamma)=\begin{cases} w_b & 0\le\beta\le 2\gamma_m-2\gamma \\ 1 & 2\gamma_m-2\gamma<\beta\le\pi-2\gamma \\ w_t & \pi-2\gamma<\beta\le\pi+2\gamma_m \end{cases}$$

$$\omega(\beta,\gamma)=3\chi^2(\beta,\gamma)-2\chi^3(\beta,\gamma)$$

wherein w_b is about .6.